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(11) **EP 1 010 706 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
30.08.2000 Bulletin 2000/35

(51) Int Cl.7: **C08F 2/02, C08F 18/08**

(43) Date of publication A2:
21.06.2000 Bulletin 2000/25

PCF search RPF of Bush

(21) Application number: **99309772.4**

(22) Date of filing: **06.12.1999**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
 Designated Extension States:
AL LT LV MK RO SI

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(30) Priority: **15.12.1998 US 212038**

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(54) **Continuous polymerization process and products therefrom**

(57) A continuous process for oligomers which do not contain, as polymerized units, carboxylic acid-containing monomers and their salts, including the steps of:

least one free-radical initiator; and

(1) forming a reaction mixture, substantially free of carboxylic acid-containing monomers and their salts, containing:

(2) continuously passing the reaction mixture through a heated zone wherein the reaction mixture is maintained at a temperature of at least 150°C and a pressure of at least 30 bars for from 0.1 seconds to 4 minutes to form terminally-unsaturated oligomers.

- (i) 0.5 to 99.95% by weight of the reaction mixture of at least one ethylenically unsaturated monomer; and
- (ii) 0.05 to 25% by weight, based on the weight of the ethylenically unsaturated monomer, of at

In addition, processes for forming oligomers of vinyl acetate and oligomers of vinyl alcohol are disclosed. Mixtures of fully saturated and terminally unsaturated oligomers are also disclosed.

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EUROPEAN SEARCH REPORT

Application Number

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DOCUMENTS CONSIDERED TO BE RELEVANT			
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X	EP 0 590 842 A (ROHM & HAAS) 6 April 1994 (1994-04-06) * claims 1-10 * * page 4, line 26 * * page 5, line 1,2 * ---	1,2,4-8, 10-16	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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-The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 March 2000	Examiner Rose, E
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document</p> <p>T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document</p>			

EPO FORM 1503 (03.02) (P04C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-19 (in part)



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**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
EP 99 30 9772

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: Claims 1-19 (in part)

Process for forming terminally unsaturated oligomers (A).

2. Claims: Claims 20-21 (in part)

Mixture comprising: (A)oligomer having terminal unsaturation
and (B)oligomer having no terminal unsaturation.

3. Claim : Claim 22 (in part)

Composition consisting of a) (A) or (B), b)surfactant,
c)water.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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14-03-2000

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